Aythya fuligula (Tufted Duck)

European Red List of Birds

Supplementary Material

The European Union (EU28) Red List assessments were based principally on the official data reported by EU Member States to the European Commission under Article 12 of the Birds Directive in 2019-20. For the European Red List assessments, similar data were sourced from BirdLife Partners and other collaborating experts in other European countries and territories. For more information, see BirdLife International (2021).

Contents

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Recommended citation

BirdLife International (2021) European Red List of Birds. Luxembourg: Publications Office of the European Union.

Further information

http://datazone.birdlife.org/info/euroredlist
http://www.birdlife.org/europe-and-central-asia/european-red-list-birds-0
http://www.iucnredlist.org/regions/europe
http://ec.europa.eu/environment/nature/conservation/species/redlist/

Data requests and feedback

To request access to these data in electronic format, provide new information, correct any errors or provide feedback, please email science@birdlife.org.

Table 1. Reported national breeding population size and trends in Europe[1].

Country (or territory)[2]	Population estimate				Short-term population trend[5]				Long-term population trend[5]				Subspecific population (where relevant)
	Size (pairs)[3]	Europe (%)	Year(s)	Method[4]	Direction[6]	Magnitude (%)[7]	Year(s)	Method[4]	Direction[6]	Magnitude (%)[7]	Year(s)	Method[4]	
Armenia	6–14	<1	2013-2018	complete	?		2007-2018	deficient	?		2003-2018	deficient	
Austria	700–1000	<1	2013-2018	complete	0		2007-2018	partial	+		1981-2018	complete	
Belarus	3000–4500	<1	2010-2018	partial	0	-10 to 10	2012-2019	expert	F	-30 to 30	1980-2019	expert	
Belgium	1800–3000	<1	2013-2018	partial	+	14 to 710	2008-2018	complete	+	800 to 1400	1973-2018	partial	
Bosnia & HG	10–20	<1	2015-2018	complete	?	-10 to 10	2007-2018	complete	?		1980-2018	deficient	
Croatia	0	<1	2012-2018	deficient	?		2007-2018	deficient	?		1980-2018	deficient	
Czechia	9000–18000	2	2014-2017	complete	-	-25	2001-2017	complete	-		1981-2017	partial	
Denmark	520–530	<1	2017	partial	-	-68 to -30	2006-2017	complete	0	-22 to 30	1985-2017	complete	
Estonia	3000–5000	<1	2013-2017	partial	0	67 to 71	2006-2017	partial	-	-144 to -9	1980-2017	partial	
Finland	33700–80000	11	2013-2018	complete	-	-54 to -34	2007-2018	complete	-	-65 to -56	1986-2018	complete	
France	2000–3200	<1	2013-2018	partial	+	50 to 100	2012-2018	partial	+	400 to 500	1985-2018	partial	
Georgia	12–120	<1	2013-2017	partial	?			deficient	?				
Germany	21000–31000	5	2016-2016	expert	0		2004-2016	expert	+		1985-2016	expert	
Hungary	0–50	<1	2013-2018	partial	-	-33 to -29	2007-2018	partial	+	0 to 100	1980-2018	expert	
Iceland	12000–14000	2	2005	partial	+		2006-2018	partial	+		1980-2018	partial	
Rep. Ireland	600–810	<1	2008-2011	partial	0		2000-2011	expert	?		1980-2011	deficient	
Italy	60–80	<1	2013-2018	expert	+	10 to 20	2009-2012	expert	+	430 to 1100	1993-2018	expert	
Latvia	800–1000	<1	2015-2018	expert	0	-9 to -8	2000-2018	expert	0		1991-2017	partial	
Lithuania	1800–2300	<1	2013-2018	partial	-	-23 to -10	2013-2018	partial	0		1980-2018	partial	
Luxembourg	5–7	<1	2013-2018	complete	0	0 to 10	2007-2018	complete	+	100 to 700	1980-2018	partial	
Moldova		<1	2014-2017		?				?		1990-2018	deficient	
Montenegro	20–40	<1	2002-2012	expert	0		2007-2018	expert	?				
Netherlands	20000–24000	4	2013-2015	complete	0	-4 to 13	2006-2017	complete	+	39 to 89	1984-2017	complete	
Norway	6500–9000	1	2013-2018	partial	?		2013-2018	deficient	?		1980-2018	partial	
Poland	2000–5000	<1	2013-2018	expert	-	-65 to -20	2007-2018	complete	-	-80 to -50	1980-2018	expert	
Romania	1–3	<1	2013-2018	deficient	F	-100 to 300	2007-2018	expert	F	-100 to 300	1980-2018	expert	
Russia	250000–300000	52	2008-2018	partial	-	0	2008-2018	partial	-	0	1980-2018	partial	
Serbia	2–10	<1	2013-2018	expert	F	0	2007-2018	expert	F	0	1980-2018	expert	
Slovakia	250–500	<1	2013-2018	complete	0		2007-2018	complete	0		1980-2018	complete	
Slovenia	70–110	<1	2013-2018	complete	+		2007-2018	complete	?		1980-2018	deficient	
Spain	1–3	<1	2013-2018	complete	0		2007-2018	complete	0		1980-2018	complete	
Sweden	53000–93000	14	2013-2018	partial	0	-3 to 53	2007-2018	partial	0	-60 to 10	1980-2018	partial	

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Country (or territory)[2]	Population estimate				Short-term population trend[5]				Long-term population trend[5]				Subspecific population (where relevant)
	Size (pairs)[3]	Europe (%)	Year(s)	Method[4]	Direction[6]	Magnitude (%)[7]	Year(s)	Method[4]	Direction[6]	Magnitude (%)[7]	Year(s)	Method[4]	
Switzerland	160–280	<1	2013–2016	complete	0	-22 to 97	2007-2018	complete	+	40 to 127	1990-2018	complete	
Turkey	10–100	<1	2002-2012	partial	?		2008-2019	deficient	?		1980-2013	deficient	
Ukraine	1200–1500	<1	2010-2018	partial	0		2010-2018	partial	F		1980-2018	partial	
United Kingdom	16500–19000	3	2016	complete	-		2004-2016	complete	0		1980-2016	complete	
EU28	166000–288000	43											
Europe	**439000–618000**	**100**											

[1] See 'Sources' at end of factsheet, and for more details on individual EU Member State reports, see the Article 12 reporting portal at http://bd.eionet.europa.eu/article12/report.
[2] The designation of geographical entities and the presentation of the material do not imply the expression of any opinion whatsoever on the part of IUCN or BirdLife International concerning the legal status of any country, territory or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.
[3] In the few cases where population size estimates were reported in units other than those specified, they were converted to the correct units using standard correction factors.
[4] The 'method used' (replacing the data 'quality' assessment in the 2015 European Red List) is reported as: a) Complete: complete survey or a statistically robust estimate; b) Partial: based mainly on extrapolation from a limited amount of data; c) Expert: based mainly on expert opinion with very limited data; d) Defficient: insufficient or no data available.
[5] The robustness of regional trends to the effects of any missing or incomplete data was tested using plausible scenarios, based on other sources of information, including any other reported information, recent national Red Lists, scientific literature, other publications and consultation with relevant experts.
[6] Trend directions are reported as: increasing (+); decreasing (-); stable (0); fluctuating (F); or unknown (?).
[7] Trend magnitudes are rounded to the nearest integer.

Table 2. Reported national wintering population sizes and trends in Europe[1]. Note that some countries within the species' wintering range did not report any data, and that only minimum totals are presented, to avoid double-counting of birds moving between countries.

Country (or territory)[2]	Population estimate				Short-term population trend[5]				Long-term population trend[5]				Subspecific population (where relevant)
	Size (individuals)[3]	Europe (%)	Year(s)	Method[4]	Direction[6]	Magnitude (%)[7]	Year(s)	Method[4]	Direction[6]	Magnitude (%)[7]	Year(s)	Method[4]	
Albania	900–4100	<1	2007-2018	complete	+	0 to 80	2007-2018	complete	+	-15 to 80	1980-2018	complete	
Armenia	1000–2000	<1	2013-2018	partial	-	-5 to -3	2007-2018	partial	?		2003-2018	deficient	
Austria	13300–30100	2	2013-2018	complete	+		2007-2018	complete	0		1981-2014	complete	
Azerbaijan	50000–300000	9	1996-2019	complete	-		2010-2019	complete	-		1980-2019	expert	
Belarus	500–1000	<1	2013-2018	partial	0	-10 to 10	2000-2012	partial	?				
Belgium	13000–20000	1	2013-2018	complete	0	-21 to 13	2007-2018	complete	-	-29 to -4	1992-2018	complete	
Bosnia & HG	500–1300	<1	2015-2018	complete	?		2007-2018	deficient	?		1980-2018	deficient	
Bulgaria	1000–5700	<1	2013-2018	complete	F		2000-2018	complete	-	-90 to -5	1980-2018	complete	
Croatia	0	<1	2012-2018	deficient	?		2007-2018	deficient	?		1980-2018	deficient	
Cyprus	3–19	<1	2013-2018	partial	0	0	2007-2018	partial	-	-40 to -10	1980-2018	expert	
Czechia	3800–6100	<1	2015-2019	complete	0		2008-2019	complete	+		1980-2019	complete	
Denmark	91200–91300	7	2016-2016	complete	-		2006-2017	complete	-		1987-2016	complete	
DK: Faroe Is	0–50	<1	1992		?				?				
Estonia	3000–5000	<1	2013-2017	complete	+		2006-2017	complete	+		1980-2017	complete	
Finland	26400–66800	3	2014-2018	complete	+	4 to 335	2007-2018	complete	+	8746 to 15551	1980-2018	complete	
France	34100–40300	3	2013-2018	complete	-	-27 to -4	2007-2017	complete	-	-58 to -51	1980-2017	complete	
Georgia	70–240	<1	2014-2019	expert	?				-			partial	
Germany	270000	20	2011-2016	complete	-	-17 to -10	2003-2016	complete	0	-16 to -10	1980-2016	complete	
Greece	10500–11500	<1	2015	partial	?		2007-2018	deficient	?		1980-2018	deficient	
Hungary	3000–3500	<1	2015-2018	partial	F		2007-2018	complete	-	-87 to -74	1996-2018	complete	
Iceland	400–500	<1	2018	partial	0		2002-2014	partial	+		1980-2014	partial	
Rep. Ireland	16900–17000	1	2011-2016	complete	-		2004-2016	complete	?		1987-2016	deficient	
Italy	6700–7400	<1	2013-2015	partial	0		2009-2015	partial	-	-20 to -5	1991-2015	partial	
Latvia	8–1700	<1	2016-2018	complete	?	-95 to 56978	2009-2018	complete	+	51 to 2287	1991-2018	complete	
Luxembourg	100–250	<1	2013-2018	complete	0	0 to 10	2007-2018	complete	+	0 to 50	1980-2018	expert	
North Macedonia	300–2500	<1	2013-2018	complete	+	400 to 650	2010-2019	complete	-	-93 to -80	1988-2018	complete	
Moldova	1800–2400	<1	2018-2019	partial	F		2007-2018	partial	0		1990-2018	expert	
Montenegro	30–150	<1	2013-2018	expert	0		2007-2018	expert	?				
Netherlands	188000–221000	15	2013-2017	complete	0	-20 to 9	2006-2017	complete	0	-21 to 13	1981-2017	complete	
Norway	5000–7500	<1	1994-2018	partial	?		2013-2018	deficient	?		1980-2018	deficient	
Poland	11300–58700	3	2013-2018	complete	+	7 to 54	2011-2018	complete	?		1980-2018	deficient	

Table 2. Reported national wintering population sizes and trends in Europe[1]. Note that some countries within the species' wintering range did not report any data, and that only minimum totals are presented, to avoid double-counting of birds moving between countries.

Country (or territory)[2]	Population estimate				Short-term population trend[5]				Long-term population trend[5]				Subspecific population (where relevant)
	Size (individuals)[3]	Europe (%)	Year(s)	Method[4]	Direction[6]	Magnitude (%)[7]	Year(s)	Method[4]	Direction[6]	Magnitude (%)[7]	Year(s)	Method[4]	
Portugal	70–310	<1	2013-2018	complete	?	-18 to 78	2007-2018	complete	?		1988-2018	partial	
PT: Azores	0	<1	2013-2018	deficient	?		2007-2018	deficient	?		1980-2018	deficient	
Romania	9200–17800	<1	2013-2018	partial	?	-5 to 2	2013-2018	complete	?	-4 to 8	2000-2018	complete	
Serbia	2000–5000	<1	2013-2018	complete	F		2013-2018	complete	-	-49 to -30	1980-2018	partial	
Slovakia	7000–23000	<1	2013-2018	complete	0		2007-2018	complete	+	1000 to 3000	1980-2018	partial	
Slovenia	800–3000	<1	2013-2018	complete	+		2007-2018	complete	-	-70 to -60	1980-2018	expert	
Spain	1800–2500	<1	2012-2018	complete	?	-80 to 45	2007-2018	complete	-		1980-2018	complete	
Sweden	160000–200000	13	2013-2018	complete	+	4 to 46	2007-2018	complete	+	120 to 165	1980-2018	complete	
Switzerland	49300–72400	4	2015-2019	complete	-	-23	2008-2019	complete	-	-44	1980-2019	complete	
Turkey	19400–36300	2	2013-2019	complete	?		2008-2019	deficient	?		1980-2019	deficient	
Ukraine	5000–25000	<1	2014-2017	partial	?		2007-2018	partial	F		1980-2018	partial	
United Kingdom	140000–141000	10	2012-2016	complete	0		2005-2016	complete	+		1980-2016	complete	
EU28	1000000–1230000	82											
Europe	**1140000–1710000**	**100**											

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Trend maps

A symbol appears in each country where the species occurs: the shape and colour of the symbol represent the population trend in that country, and the size of the symbol corresponds to the proportion of the European population occurring in that country.

KEY

- Large increase (≥50%)
- Moderate increase (20–49%)
- Small increase (<20%)
- Increase of unknown magnitude
- Large decrease (≥50%)
- Moderate decrease (20–49%)
- Small decrease (<20%)
- Decrease of unknown magnitude
- Stable or fluctuating
- Unknown
- Present (no population or trend data)
- Extinct since 1980

Each symbol, with the exception of Present and Extinct, may occur in up to three different size classes, corresponding to the proportion of the European population occurring in that country.

- Large: ≥10% of the European population
- Medium: 1–9% of the European population
- Small: <1% of the European population

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Figure 1. Breeding population sizes and short-term trends across Europe.

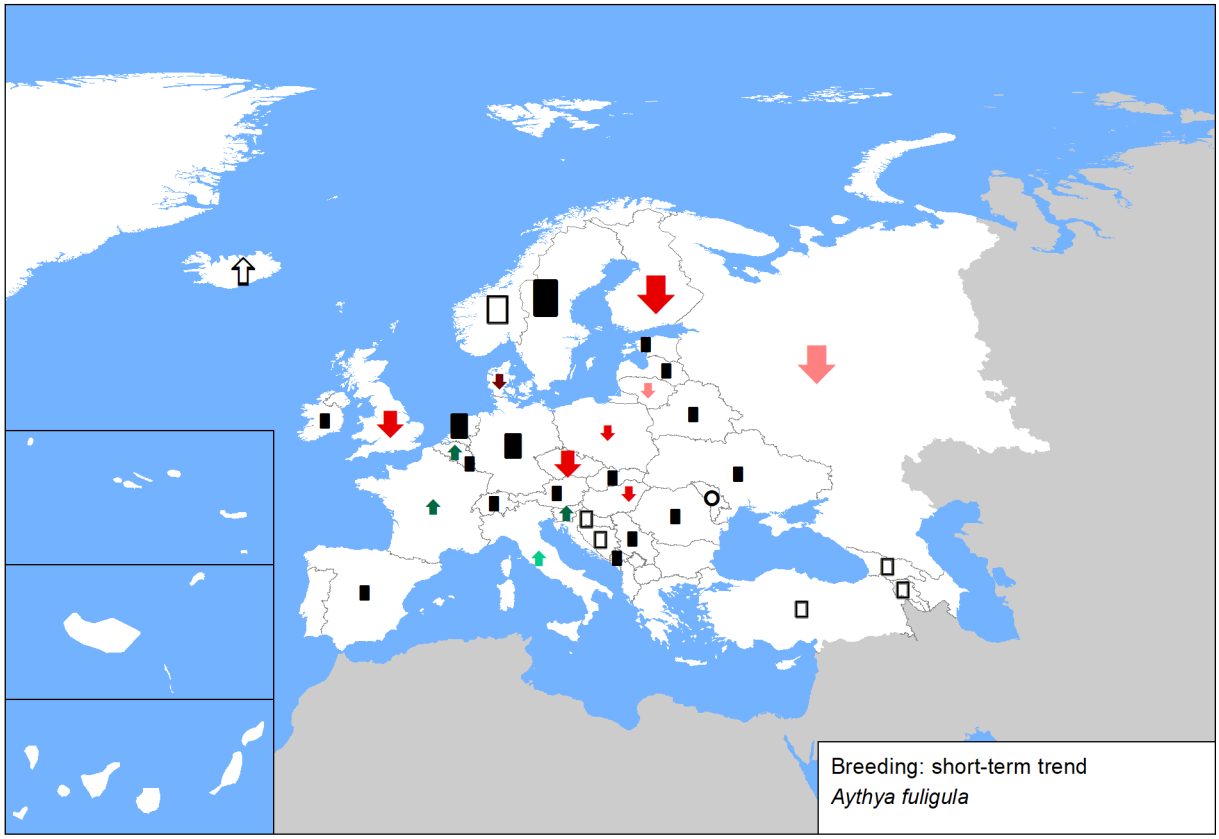


Figure 2. Breeding population sizes and long-term trends across Europe.

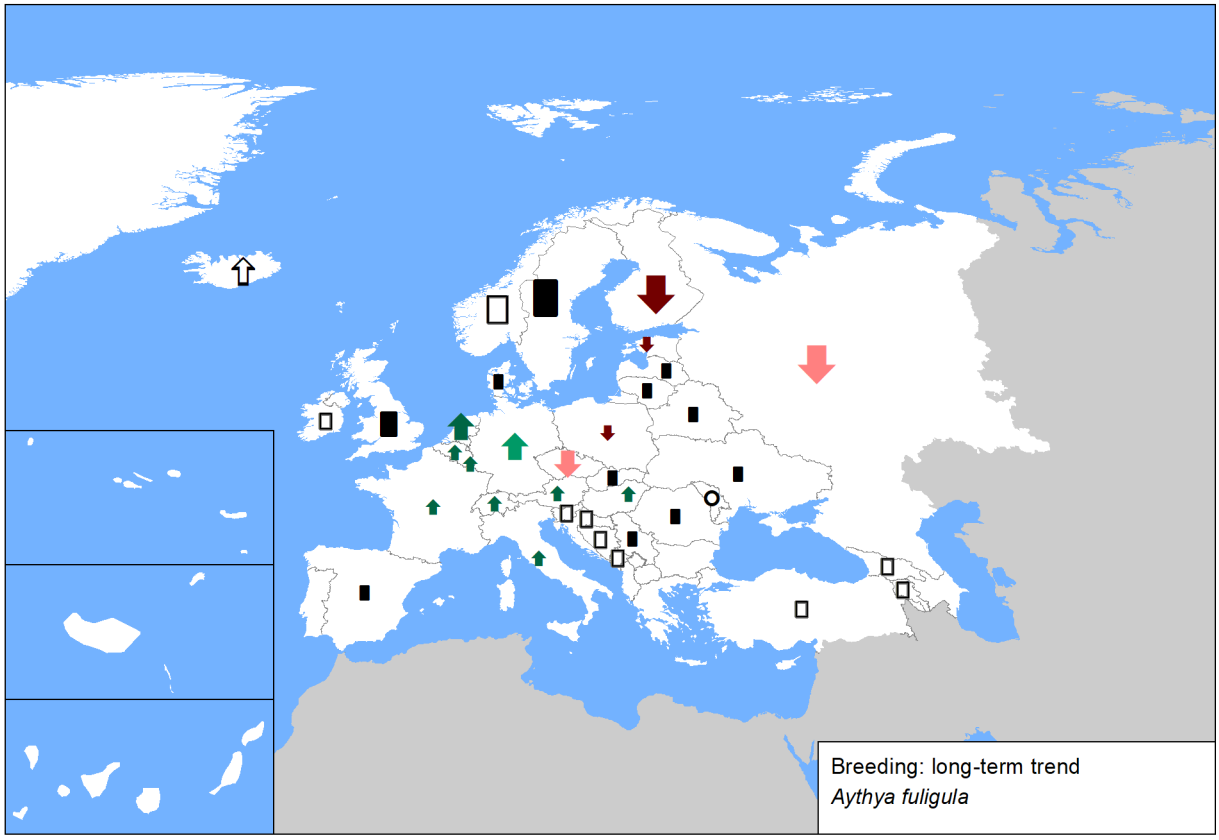


Figure 3. Reported wintering population sizes and short-term trends across Europe. Note that some countries within the species' wintering range did not report any data.

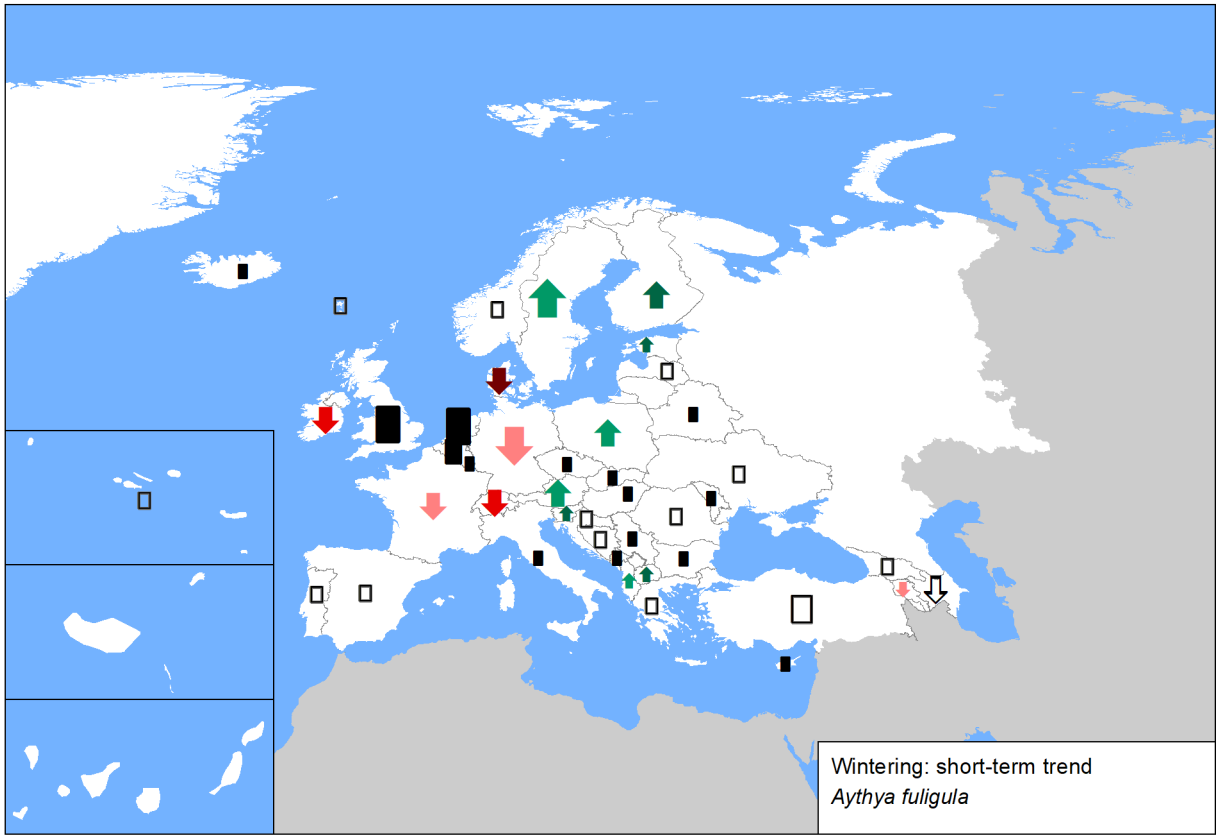
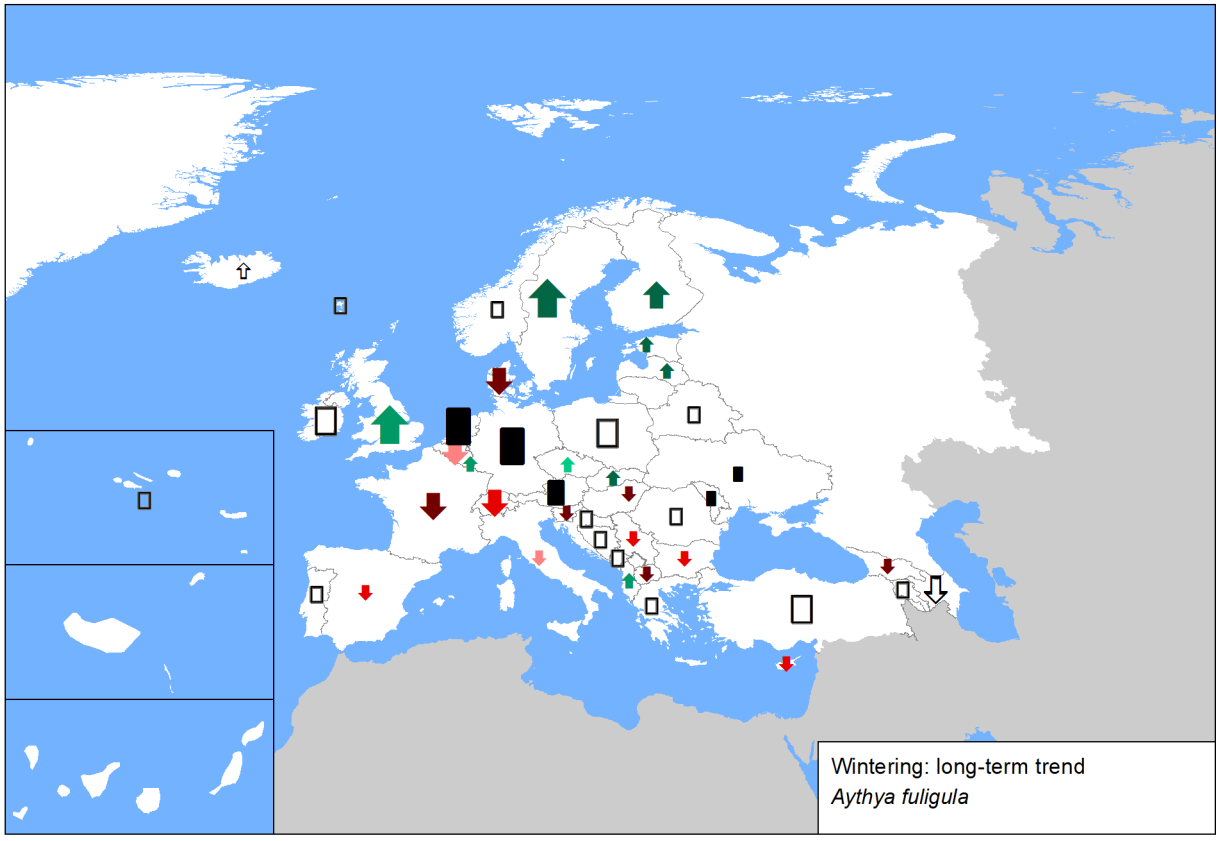


Figure 4. Reported wintering population sizes and long-term trends across Europe. Note that some countries within the species' wintering range did not report any data.



Sources

Albania

Winter population size: Bino pers. obs.
Winter short-term trend: Bino et al. 2018
Winter long-term trend: Bino et al. 2018

Armenia

Breeding population size: TSE NGO
Breeding short-term trend: TSE (2020) The Atlas of the Breeding Birds in Armenia. In preparation.
Breeding long-term trend: TSE (2020) The Atlas of the Breeding Birds in Armenia. In preparation.
Winter population size: TSE NGO, National Bird Monitoring
Winter short-term trend: TSE calculations using TRIM
Winter long-term trend: TSE calculations using TRIM

Austria

Breeding population size: BirdLife Austria, unpublished data from www.ornitho.at
Breeding short-term trend: BirdLife Austria, unpublished data from www.ornitho.at; BirdLife Austria, unpublished archive data
Breeding long-term trend: Dvorak et al. 1994
Winter population size: BirdLife Austria, data of the International Waterfowl Counts (January count)
Winter short-term trend: BirdLife Austria, data of the International Waterfowl Counts (January count)
Winter long-term trend: BirdLife Austria, unpublished data based on indices calculated by the program TRIM

Azerbaijan

Winter population size: AOS data base
Winter short-term trend: AOS Data Base
Winter long-term trend: AOS Data Base

Belarus

Breeding population size: Research work of the National Academy of Sciences of the Republic of Belarus “Dynamics and predictive assessment of changes in the state of populations of the main resource and biocenotically most important bird species in Belarus”
Breeding long-term trend: Kozulin A., Yourko V., Pareiko O., Pavlushchick T., Tcherkas N. 1998. Waterfowl in Belarus - population estimates and habitat changes. Acta orn. 33:113-126. Viksne J., Svazas S., Czajkovski A., Janaus M., Mischenko A., Kozulin A., Kuresoo A., Serebryakov V. Atlas of Duck populations in Eastern Europe. – 2010. – Vilnius, Akstis. – 199 p. Nikiforov M.E., Kozulin A.V., eds. Belarussian birds at the beginning of XXI century: status, numbers, distribution. - 1997. - Minsk. - 187 p.
Winter population size: Bogdanovich I.A. - personal communication
Winter short-term trend: Bogdanovich I.A. - personal communication

Belgium

Breeding population size: Vermeersch G. et al. (2018, in press). Broedvogels in Vlaanderen in de periode 2013-2018. Rapporten van het Instituut voor Natuur- en Bosonderzoek (INBO), Brussel. / Paquet, J-Y., Anselin, A., Vermeersch, G., Derouaux, A., Devos, K. (2019, in prep.). Contribution of Belgium to EBCC European Breeding Bird Atlas 2. Internal Report.
Breeding short-term trend: Vermeersch G. et al. (2018, in press). Broedvogels in Vlaanderen in de periode 2013-2018. Rapporten van het Instituut voor Natuur- en Bosonderzoek (INBO), Brussel. / Paquet, J-Y., Anselin, A., Vermeersch, G., Derouaux, A., Devos, K. (2019, in prep.). Contribution of Belgium to EBCC European Breeding Bird Atlas 2. Internal Report.
Breeding long-term trend: Vermeersch G. et al. (2018, in press). Broedvogels in Vlaanderen in de periode 2013-2018. Rapporten van het Instituut voor Natuur- en Bosonderzoek (INBO), Brussel. / Paquet, J-Y., Anselin, A., Vermeersch, G., Derouaux, A., Devos, K. (2019, in prep.). Contribution of Belgium to EBCC European Breeding Bird Atlas 2. Internal Report.
Winter population size: Waterbird database INBO
Winter short-term trend: Waterbird database INBO & Aves
Winter long-term trend: Waterbird database INBO & Aves

Bosnia and Herzegovina

Breeding population size: Based on data for EBBA2
Breeding short-term trend: more individual articles e.g published in magazine Bilten mreže posmatrača ptica u Bosni i Hercegovini-see https://ptice.ba/bs/category/bilteni_/), individual reports (e.g. for EBBA2, projects etc)
Winter population size: based on IWC reports-all reports published in magazine Bilten mreže posmatrača ptica (www.ptice.ba)
Winter short-term trend: based on IWC reports-all reports published in magazine Bilten mreže posmatrača ptica (www.ptice.ba)
Winter long-term trend: There are no qualitative data before 2005 to make estimates

Bulgaria

Winter population size: Wetlands International (2019): Submitted IWC data for Bulgaria for period 2013-2018.; National Art. 12 reporting database 2013-2018; National workshop of experts, Sofia 27-29.8.2019

Winter short-term trend: BSPb GIS-related ornithological information database; National Art. 12 reporting database 2013-2018; IWC counts in Bulgaria Kostadinova, I & S. Dereliev. 2001. Results from the Mid-winter Counts in Bulgaria. BSPB Conservation Series Book 3.; Michev, T., L. Profirov. 2003. Midwinter Numbers of Waterbirds in Bulgaria (1977-2001). Results from 25 years of mid-winter count carried out at the most important Bulgarian Wetlands. Publ. House Pensoft, Sofia, 160 pp.; M., T. Michev, L. Profirov, K. Nyagolov. 2005. Waterbirds of Bourgas Wetlands: Results and Evaluation of the Monthly Waterbirds Monitoring 1996-2002. Bulgarian Biodiversity Foundation and Publ. House Pensoft, Sofia, 160 pp.;

Winter long-term trend: - BSPb GIS-related ornithological information database - IWC counts in Bulgaria - Kostadinova, I & S. Dereliev. 2001. Results from the Mid-winter Counts in Bulgaria. BSPB Conservation Series Book 3.

Croatia

Breeding population size: Središnja lovna evidencija (https://sle.mps.hr) No data available.

Breeding short-term trend: No data available.

Breeding long-term trend: No data available.

Winter population size: No data available.

Winter short-term trend: No data available.

Winter long-term trend: No data available.

Cyprus

Winter population size: Monthly waterbird counts by BirdLife Cyprus and Game & Fauna Service, as published in BirdLife Cyprus monthly checklists and also by the Game & Fauna Service; Analysis of recent BirdLife Cyprus bird sightings records reported in the society's annual reports. Very poor data

Winter short-term trend: Monthly waterbird counts by BirdLife Cyprus and Game & Fauna Service, as published in BirdLife Cyprus monthly checklists and also by the Game & Fauna Service; Analysis of recent BirdLife Cyprus bird sightings records reported in the society's annual reports.

Winter long-term trend: More recent records (2000 onwards) as above, pre-2000 records based on birdwatching records as reported in BirdLife Cyprus annual reports

Czechia

Breeding population size: Šťastný et Bejček in prep. - Atlas hnízdního rozšíření ptáků ČR 2014-2017

Breeding short-term trend: Trends in waterbird breeding population size were estimated using changes in population data from nation-wide numbers project of “Atlas of Breeding Bird Distribution” carried out in whole Czech Republic in 2001 -2003 and 2014 – 2017. Range of relative change in breeding population size was used as the measurement of population trend. The values of relative rate of change were compared with data from annual monitoring (census in May – see Musil & Fuchs 1994, Musil et al. 2001, Čehovská et al. 2019 for the methods) on limited amount of sites (fishpond regions in south and central Bohemia - see Musil & Fuchs 1994). Čehovská M., Musil P., Musilová Z., Poláková, K. & Zouhar J. 2019: Diving duck census efficiency based on monitoring of individually marked females: the influence of breeding stage of individual females and timing of census. Bird Study in press. Musil P. Cepák J. Hudec K. & Zárybnický J. 2001. The long-term trends in the breeding waterfowl populations in the Czech Republic. OMPO, Institute of Applied Ecology, Kostelec nad Černými lesy. Musil P. & Fuchs R. 1994: Changes in abundance of water birds species in southern Bohemia (Czech Republic) in the last 10 years. Development in Hydrobiology. In: Kerekes J. J. [ed.]: Aquatic Birds in Trophic Web of Lakes. Hydrobiologia 279/280: 511–519.

Breeding long-term trend: The long-term trends were analysed using data from annual waterbird census carried out in May (see Musil & Fuchs 1994, Musil et al. 2001, Čehovská et al. 2019 for the methods) on limited amount of sites (fishpond regions in south and central Bohemia – see Musil & Fuchs 1994). The individual species trends in numbers were calculated by Trends and Indices for Monitoring data (TRIM) software (Statistics Netherlands version 3.52, Pannekoek and Van Strien, 2005). The additive slope (i.e. the change in indices from one year to the next) was used to estimate the Czech trend, see also Fouque et al. (2009), Musil et al. (2011). Čehovská M., Musil P., Musilová Z., Poláková, K. & Zouhar J. 2019: Diving duck census efficiency based on monitoring of individually marked females: the influence of breeding stage of individual females and timing of census. Bird Study in press. Fouque C, Guillemain M, Schricke V (2009) Trends in the numbers of Coot Fulica atra and wildfowl Anatidae wintering in France and their relationship with hunting activity at wetland sites. Wildfowl. Special Issue Musil P. Cepák J. Hudec K. & Zárybnický J. 2001. The long-term trends in the breeding waterfowl populations in the Czech Republic. OMPO, Institute of Applied Ecology, Kostelec nad Černými lesy. Musil P. & Fuchs R. 1994: Changes in abundance of water birds species in southern Bohemia (Czech Republic) in the last 10 years. Development in Hydrobiology. In: Kerekes J. J. [ed.]: Aquatic Birds in Trophic Web of Lakes. Hydrobiologia 279/280: 511–519. Musil P, Musilová Z, Fuchs R, Poláková S (2011) Long-term changes in numbers and distribution of wintering waterbirds in the Czech Republic, 1966–2008. Bird Study 58: 450–460.

Winter population size: Waterbird numbers were recorded in mid-January by regular citizen-science monitoring programme - the International Waterbird Census (IWC) – see Gilissen et al. 2002, Wetlands International 2006, Wetlands International 2019. Hundreds of volunteer birdwatchers conduct the mid-January counts on predetermined dates and sites each year, aiming to maximize synchrony (Gilissen et al. 2002, Musil et al. 2011, Musilová et al. 2014). The estimation of population size was calculated by Trends and Indices for Monitoring data (TRIM) software (Statistics Netherlands version 3.52, Pannekoek and Van Strien, 2005). ‘Time Totals’ values of the data (i.e. the actual count values plus the numbers of birds estimated by the TRIM software) for all 1155 sites included in the analysis were used to generate total estimates of the range of numbers of the waterbird species wintering in the Czech Republic between 2015 and 2019. We use the range (min–max) of population estimates due to the effect of between-year variation in numbers because of variable climatic conditions (Musil et al. 2008, Musilová et al. 2018). Gilissen N, Haanstra L, Delany S, Boere G, Hagemeijer W (2002) Numbers and distribution of wintering waterbirds in the Western Palearctic and Southwest Asia in 1987, 1988 and 1999. Results from the International Waterbird Census. Wetlands International Global Series No. 11, Wetlands International, Wageningen, The Netherlands. Musil P, Darolová A, Jureček J, Musilová Z, Podhrázský M, Slabeyová K (2008) The long-term trends in numbers of wintering geese in the Czech Republic and Slovakia in 1991–2007. Tichodroma 20: 61–67. Musil P, Musilová Z, Fuchs R, Poláková S (2011) Long-term changes in numbers and distribution of wintering waterbirds in the Czech Republic, 1966–2008. Bird Study 58: 450–460. Musilová Z, Musil P, Zouhar J, Adam M (2018) Changes in habitat suitability influence non-breeding distribution of waterbirds in central Europe. Ibis: 160: 582–596. Musilová Z, Musil P, Zouhar J, Bejček V, Šťastný K, Hudec K (2014) Numbers of wintering waterbirds in the Czech Republic: long-term and spatial-scale approaches to assess population size. Bird Study 61: 321–331.

Czechia

Winter short-term trend: Waterbird numbers were recorded in mid-January by regular citizen-science monitoring programme - the International Waterbird Census (IWC) – see Gilissen et al. 2002, Wetlands International 2006, Wetlands International 2019. Hundreds of volunteer birdwatchers conduct the mid-January counts on predetermined dates and sites each year, aiming to maximize synchrony (Gilissen et al. 2002, Musil et al. 2011, Musilová et al. 2014). The individual species trends in numbers was calculated by Trends and Indices for Monitoring data (TRIM) software (Statistics Netherlands version 3.52, Pannekoek and Van Strien, 2005). The additive slope (i.e. the change in indices from one year to the next) was used to estimate the Czech trend, see also Fouque et al. (2009), Musil et al. (2011), Musilová et al. (2015), Musilová et al. (2018 a, b). Fouque C, Guillemain M, Schricke V (2009) Trends in the numbers of Coot Fulica atra and wildfowl Anatidae wintering in France and their relationship with hunting activity at wetland sites. Wildfowl. Special Issue 2: 42–59. Gilissen N, Haanstra L, Delany S, Boere G, Hagemeijer W (2002) Numbers and distribution of wintering waterbirds in the Western Palearctic and Southwest Asia in 1987, 1988 and 1999. Results from the International Waterbird Census. Wetlands International Global Series No. 11, Wetlands International, Wageningen, The Netherlands. Musil P, Musilová Z, Fuchs R, Poláková S (2011) Long-term changes in numbers and distribution of wintering waterbirds in the Czech Republic, 1966–2008. Bird Study 58: 450–460. Musilová Z, Musil P, Zouhar J, Adam M (2018a) Changes in habitat suitability influence non-breeding distribution of waterbirds in central Europe. Ibis: 160: 582–596. Musilová Z, Musil P, Zouhar J, Adam M, Bejček V (2018b) Importance of Natura 2000 sites for wintering waterbirds: Low preference, species' distribution changes and carrying capacity of Natura 2000 could fail to protect the species. Biological Conservation 228: 79–88. Musilová Z, Musil P, Zouhar J, Bejček V, Šťastný K, Hudec K (2014) Numbers of wintering waterbirds in the Czech Republic: long-term and spatial-scale approaches to assess population size. Bird Study 61: 321–331. Musilová Z, Musil P, Zouhar J, Romportl D (2015) Long-term trends, total numbers and species richness of increasing waterbird populations at sites on the edge of their winter range: cold-weather refuge sites are more important than protected sites. J Ornithol: 1–10. Pannekoek J, Van Strien AJ (2005) TRIM 3 Manual (TRends and Indices for Monitoring Data). Statistics Netherlands, Voorburg, The Netherlands. Wetlands International (2006) Waterbird population estimates. Fourth Edition. Wetlands International, Wageningen, The Netherlands. Wetlands International (2019) Waterbird Population Estimates. Available at: wpe.wetlands.org (accessed 10 March 2019).

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Denmark

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Winter population size: Nielsen, R.D., Holm, T.E., Clausen, P., Bregnballe. T., Clausen, K.K., Petersen, I.K., Sterup, J., Balsby, T.J.S., Pedersen, C.L., Mikkelsen, P. & Bladt, J. (2019). Fugle 2012-2017. NOVANA. Aarhus Universitet, DCE – Nationalt Center for Miljø og Energi. - Videnskabelig rapport nr. 314. http://dce2.au.dk/pub/SR314.pdf and http://novana.au.dk/fugle/

Winter short-term trend: Kleefstra R., Hornman M., Bregnballe T., Frikke J., Günther K., Hälterlein B., Körber P., Ludwig J., Scheiffarth G. (2019). Trends of Migratory and Wintering Waterbirds in the Wadden Sea 1987/1988 - 2016/2017. Wadden Sea Ecosystem No. 39. Common Wadden Sea Secretariat, Joint Monitoring Group of Migratory Birds in the Wadden Sea, Wilhelmshaven, Germany. Nielsen, R.D., Holm, T.E., Clausen, P., Bregnballe. T., Clausen, K.K., Petersen, I.K., Sterup, J., Balsby, T.J.S., Pedersen, C.L., Mikkelsen, P. & Bladt, J. (2019). Fugle 2012-2017. NOVANA. Aarhus Universitet, DCE – Nationalt Center for Miljø og Energi. - Videnskabelig rapport nr. 314. http://dce2.au.dk/pub/SR314.pdf and http://novana.au.dk/fugle/

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DK: Faroe Is

Winter population size: BirdLife International 2004

Estonia

Breeding population size: Estonian Working Group on Bird Status and Numbers

Breeding short-term trend: Estonian Working Group on Bird Status and Numbers

Breeding long-term trend: Estonian Working Group on Bird Status and Numbers

Winter population size: Estonian Working Group on Bird Status and Numbers

Winter short-term trend: Estonian Working Group on Bird Status and Numbers

Winter long-term trend: Estonian Working Group on Bird Status and Numbers

Finland

Breeding population size: In this estimate data from inland and archpelago were combined while in the previous only inland was used. Monitoring schemes, from which data was combined (on the basis of of the proportions of birds in each environment as estimated by Väisänen et al. 1998): Finnish archipelago bird census (organized by Finnish Environment Institute SYKE, Metsähallitus and Natural Resources Institute Finland Luke) Waterfowl monitoring schemes of Finnish Museum of Natural History (LUOMUS) and Natural Resources Institute Finland (LUKE; previously Fisheries and Game Research Institute RKTL). Lehikoinen, A. , Below, A., Jukarainen, A., Laaksonen, T., Lehtiniemi, T., Mikkola-Roos, M., Pessa, J., Rajasärkkä, A., Rusanen, P., Sirkiä, P., Tiainen, J. & Valkama, J. 2019: Suomen lintujen pesimäkantojen koot. – Linnut-vuosikirja 2018: 38-45.
Breeding short-term trend: Waterfowl monitoring schemes of Finnish Museum of Natural History (LUOMUS) and Natural Resources Institute Finland (LUKE; previously Fisheries and Game Research Institute RKTL), combined with Archipelago bird census organized by Metsähallitus. Laaksonen, T., Lehikoinen, A., Pöysä, H., Sirkiä, P. & Ikonen, K. 2019: Sisävesien vesilintujen kannanvaihtelut 1986-2018. – Linnut-vuosikirja 2018:46-55.
Breeding long-term trend: Waterfowl monitoring schemes of Finnish Museum of Natural History (LUOMUS) and Natural Resources Institute Finland (LUKE; previously Fisheries and Game Research Institute RKTL), combined with Archipelago bird census organized by Metsähallitus. Laaksonen, T., Lehikoinen, A., Pöysä, H., Sirkiä, P. & Ikonen, K. 2019: Sisävesien vesilintujen kannanvaihtelut 1986-2018. – Linnut-vuosikirja 2018:46-55.
Winter population size: BirdLife Finland 2019: Tiira bird observation database.
Winter short-term trend: BirdLife Finland 2019: Tiira bird observation database.
Winter long-term trend: Winter bird censuses of the Finnish Museum of Natural History, University of Helsinki.

France

Winter population size: Gaudard C.et al. 2017. Synthèse des dénombrements d'oiseaux d'eau en France à la mi-janvier 2017. 178 p

Georgia

Breeding population size: EBBA Georgia, prepared by Sabuko-Society for nature conservation, Ilia state university, NGO "psovi".
Winter population size: www.observation.org

Germany

Breeding population size: Gerlach et al. (in Vorb.): Vögel in Deutschland – 2019. Dachverband Deutscher Avifaunisten, Bundesamt für Naturschutz und Länderarbeitsgemeinschaft der Vogelschutzwarten, Münster.
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Breeding long-term trend: Gerlach et al. (in Vorb.): Vögel in Deutschland – 2019. Dachverband Deutscher Avifaunisten, Bundesamt für Naturschutz und Länderarbeitsgemeinschaft der Vogelschutzwarten, Münster.
Winter population size: Dachverband Deutscher Avifaunisten e.V. (http://www.dda-web.de)
Winter short-term trend: Dachverband Deutscher Avifaunisten e.V. (http://www.dda-web.de)
Winter long-term trend: Dachverband Deutscher Avifaunisten e.V. (http://www.dda-web.de)

Greece

Winter population size: 1) Δημαλέξης, Τ., Καστρίτης, Θ., Γρίβας, Κ., Μανωλόπουλος, Α., Καρδακάρη, Ν., Κακαλής, Λ., Ξηρουχάκης, Σ., Τσαϊτουρίδης, Χ., Papazoglou, C. & Barov, B. 2009. Προσδιορισμός συμβατών δραστηριοτήτων σε σχέση με τα είδη χαρακτηρισμού των Ζωνών Ειδικής Προστασίας της ορνιθοπανίδας. Παραδοτέο 8. Οδηγός οικολογικών απαιτήσεων, απειλών και ενδεδειγμένων μέτρων για τα είδη χαρακτηρισμού. 2) Natura Viewer (http://natura2000.eea.europa.eu/#). 3) Βλάχος Χ., Μπίρτσας Π., Θωμαΐδης Χ., Χατζηνίκος Ε., Μποντζώρλος Β., Μπραζιώτης Σ., Κόντος Κ., Βλαχάκη Δ., Δεδουσοπούλου Ε., Κιούσης Δ., Ξένος Α., Στεφάνου Λ.Μ., Κασάμπαλης Δ., και Μελικώκη Κ. (Συντονιστές έκδοσης). 2015. Γ' Φάση της Μελέτης 9 «Εποπτεία και Αξιολόγηση της Κατάστασης Διατήρησης Ειδών Ορνιθοπανίδας στην Ελλάδα» ΥΠΑΠΕΝ, Αθήνα, Σύμπραξη Γραφείων Μελετών «"Φ.ΦΑΣΟΥΛΑΣ-Ν.ΜΑΝΤΖΙΟΣ" Ε.Ε. – ΡΟΔΟΥΛΑ ΚΩΝΣΤΑΝΤΙΝΙΔΟΥ ΤΟΥ ΓΕΩΡΓΙΟΥ – "ΑΘ.ΤΖΑΚΟΠΟΥΛΟΣ ΚΑΙ ΣΙΑ" Ε.Ε.», Θεσσαλονίκη.
Winter short-term trend: no data available
Winter long-term trend: no data available

Hungary

Breeding population size: National Park Directorates' databases "A közösségi jelentőségű természeti értékek hosszú távú megőrzését és fejlesztését, valamint az EU Biológiai Sokféleség Stratégia 2020 célkitűzéseinek hazai szintű megvalósítását megalapozó stratégiai vizsgálatok" programme http://map.mme.hu/maps/map2
Breeding short-term trend: Barabás, L. (2013): Breeding distribution of Hungarian Duck species. Hungarian Waterfowl Publications 23: 79-120. Expert opinions MME Nomenclator Bizottság (2008): Magyarország madarainak névjegyzéke. Nomenclator avium Hungariae. Magyar Madártani és Természetvédelmi Egyesület, Budapest. P. 278 National Park Directorates' databases http://map.mme.hu/maps/map2
Breeding long-term trend: Barabás, L. (2013): Breeding distribution of Hungarian Duck species. Hungarian Waterfowl Publications 23: 79-120. Expert opinions MME Nomenclator Bizottság (2008): Magyarország madarainak névjegyzéke. Nomenclator avium Hungariae. Magyar Madártani és Természetvédelmi Egyesület, Budapest. P. 278 National Park Directorates' databases http://map.mme.hu/maps/map2
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Iceland

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Breeding short-term trend: Yann Kolbeinsson, Árni Einarsson, Arnþór Garðarsson, Aðalsteinn Örn Snæþórsson og Þorkell Lindberg Þórarinsson 2019. Ástand fuglastofna í Þingeyjarsýslum árið 2018. Unnið fyrir Umhverfis- og auðlindaráðuneytið. Náttúrustofa Norðausturlands, NNA-1902; Náttúrustofa Norðausturlands unpubl. data.

Aythya fuligula (Tufted Duck)

Iceland

Breeding long-term trend: Yann Kolbeinsson, Árni Einarsson, Arnþór Garðarsson, Aðalsteinn Örn Snæþórsson og Þorkell Lindberg Þórarinsson 2019. Ástand fuglastofna í Þingeyjarsýslum árið 2018. Unnið fyrir Umhverfis- og auðlindaráðuneytið. Náttúrustofa Norðausturlands, NNA-1902; Náttúrustofa Norðausturlands unpubl. data.
Winter population size: Icelandic Institute of Natural History. Mid-winter bird counts, https://www.ni.is/greinar/vetrarfuglatalningar-nidurstodur; Icelandic Institute of Natural History, unpubl.data.
Winter short-term trend: Icelandic Institute of Natural History. Mid-winter bird counts, https://www.ni.is/greinar/vetrarfuglatalningar-nidurstodur; Icelandic Institute of Natural History, unpubl.data.
Winter long-term trend: Icelandic Institute of Natural History. Mid-winter bird counts, https://www.ni.is/greinar/vetrarfuglatalningar-nidurstodur; Icelandic Institute of Natural History, unpubl.data.

Republic of Ireland

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Breeding short-term trend: Balmer, D., Gillings, S., Caffrey, B., Swan, B., Downie, I. & Fuller, R. (2013) Bird Atlas 2007-11 The breeding and wintering birds of Britain and Ireland. British Trust for Ornithology. Gibbons D.W., Reid J.B, & Chapman R.A. (1993) The New Atlas of Breeding Birds in Britain and Ireland 1988-1991. Poyser, London. BirdLife International (2004) Birds in Europe: population estimates, trends and conservation status. Cambridge, UK: BirdLife International. (BirdLife Conservation Series No. 12).
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Winter population size: Burke, B., Lewis, L. J., Fitzgerald, N., Frost, T., Austin, G. & Tierney, T. D. (2018) Estimates of waterbird numbers wintering in Ireland, 2011/12 – 2015/16. Irish Birds 11, 1-12.
Winter short-term trend: Lewis, L. J., Burke, B., Fitzgerald, N., Tierney, T. D. & Kelly, S. (2019) Irish Wetland Bird Survey: Waterbird Status and Distribution 2009/10-2015/16. Irish Wildlife Manuals, No. 106. National Parks and Wildlife Service, Department of Culture, Heritage and the Gaeltacht, Ireland.
Winter long-term trend: No long term trend can be calculated

Italy

Breeding population size: Brichetti P., Fracasso G., 2018. The Birds of Italy. Vol. I. Anatidae-Alcidae. Ed. Belvedere, Latina (Italy), "historia naturae" (6), pp. 512.
Breeding short-term trend: Brichetti P., Fracasso G., 2018. The Birds of Italy. Vol. I. Anatidae-Alcidae. Ed. Belvedere, Latina (Italy), "historia naturae" (6), pp. 512.
Breeding long-term trend: Brichetti P., Meschini E., 1993. Stima delle popolazioni di uccelli nidificanti. In Meschini E., Frugis S.,1993. Atlante degli uccelli nidificanti in Italia. Suppl. Ric. Biol. Selvaggina, 20, 1-345.
Winter population size: ISPRA-IWC Database
Winter short-term trend: ISPRA-IWC Database - Zenatello M., Baccetti N., Borghesi F., 2014. Risultati dei censimenti degli uccelli acquativi svernanti in Italia. Distribuzione, stima e trend delle popolazioni nel 2001-2010. ISPRA, Serie Rapporti, 206/2014, pp: 24-28.
Winter long-term trend: ISPRA-IWC Database; Baccetti N, Dall'Antonia P, Magagnoli P, Melega L, Serra L, Soldatini C, Zenatello M 2002. Risultati dei censimenti degli uccelli acquatici svernanti in Italia: distribuzione, stima e trend delle popolazioni nel 1991-2000. Biol. Cons. Fauna 111: 19-20.

Latvia

Breeding population size: Unpublished data for European Breeding Bird Atlas (2013-2017); Expert: Andris Dekants, andris.dekants@lob.lv
Breeding short-term trend: Unpublished data for European Breeding Bird Atlas (2013-2017); Expert: Andris Dekants, andris.dekants@lob.lv
Breeding long-term trend: Strazds M., Priednieks J., Vaverins G. 1994. [Size of Latvian bird populations.] (in Latvian) In: Putni dabā, 4: 3–18 Unpublished data for European Breeding Bird Atlas (2013-2017); Expert: Andris Dekants, andris.dekants@lob.lv
Winter population size: Aunins A., Stipniece A. 2016. [Waterfowl counts at the seacoast. Final report for the year 2016.] (in Latvian). Latvian Ornithological society Stipniece A. 2018. [Waterfowl counts in inland water bodies. Final report for the year 2018.] (in Latvian). Latvian Ornithological society
Winter short-term trend: Stipniece A. 2018. [Waterfowl counts in inland water bodies. Final report for the year 2018.] (in Latvian). Latvian Ornithological society
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Lithuania

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Moldova

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Winter population size: International Waterbird Census
Winter short-term trend: SPPN expert opinion (sppn.moldova@gmail.com)
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Breeding short-term trend: NEM (Sovon, RWS, CBS, provincies)
Breeding long-term trend: NEM (Sovon, RWS, CBS, provincies)
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Aythya fuligula (Tufted Duck)

Poland

Winter short-term trend: State Environmental Monitoring / Chief Inspectorate of Environmental Protection (survey: MZPW)
Winter long-term trend: Chief Inspectorate of Environmental Protection & Polish Society for the Protection of Birds (OTOP) / BirdLife Poland

Portugal

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Romania

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Breeding short-term trend: Ornitodata (Romanian Ornithological Society) Database, OpenBirdMaps (Milvus Group) Database, Rombird (Romanian Rarity Commission) Database
Breeding long-term trend: Ornitodata (Romanian Ornithological Society) Database, OpenBirdMaps (Milvus Group) Database, Rombird (Romanian Rarity Commission) Database
Winter population size: International Waterbird Census, Romania, Ornitodata (Romanian Ornithological Society) Database, OpenBirdMaps (Milvus Group) Database
Winter short-term trend: International Waterbird Census, Romania, Ornitodata (Romanian Ornithological Society) Database, OpenBirdMaps (Milvus Group) Database
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Switzerland

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